Journal of the Society of Arts.

FRIDAY, JUNE 8, 1855.

FOURTH ANNUAL CONFERENCE.

The Council beg to announce that the Fourth Annual Conference of the Representatives of the Institutions in Union, will be held on Monday, the 2nd of July, at 11 a.m. precisely. Viscount Ebrington, M.P., Chairman of Council, will preside. The Council would be glad to receive suggestions as to the subjects to be discussed on that occasion. Institutions would oblige the Secretary by forwarding copies of their last reports, or any other information that may bear on their progress or present position.

101ST ANNIVERSARY DINNER.

The One Hundred and First Anniversary Dinner will be held at the Crystal Palace, Sydenham, on Tuesday, the 3rd of July, at 4½ for 5 o'clock p.m. precisely. The dinner tickets, to include dessert, but not wine, will be 8s. 6d. each. The tickets will be ready for delivery on and after Monday next.

The Council trust that the members of the Society and their friends will use every exertion to make this dinner as great a success as was that of last year.

INSTITUTE BOOK ORDERS.

The first arrangements made by the Society for the purchase of books and periodicals by the Institutions in Union at reduced rates, after having been in operation 19 months, have been somewhat modified, and it is hoped improved. The experience gained during that period shows that the delays necessarily involved in the execution of the orders at one particular period only in each month have been a source of inconvenience to the Institutions, and have been said, in some instances, to more than counterbalance the benefits derivable from the reductions. It has been found, too, that when the Agent's commission of 5 per cent. on the reduced rates came to be added to the account, the average rate of discount did not exceed 25 per cent., notwithstanding the much higher rates allowed by some publishers.

The Council, being desirous of improving on these arrangements, and if possible of obtaining greater facilities for the Institutions, caused inquiries to be made in the trade, and they have now the satisfaction of stating that a responsible firm are prepared to undertake the whole affair on the following terms:—To supply the orders sent through the Society of Arts from day to day, at a discount of 27½ per cent. off *books*, and 25 per cent. off *periodicals*, except where such periodicals are irregular in price, such as the Quarterlies, in which case they will charge the *trade price*,—that is, the Institutions will receive the full benefit allowed to the trade.

In future one copy of an order only will be required. This must be sent to the Secretary to the Society, as heretofore, by whom it will be countersigned, and be at once passed on to the agents, with whom the remainder of the transaction will rest. It will then be invoiced, and the Institution will be informed by the Agents of the amount to be remitted. On this being received by them, the order will be immediately executed, the invoice being returned to the Institution receipted.

MAY ACCOUNT.

	Full Price. £	s.	d.	Red. Price. £	s.	d.
Bury St. Edmunds, Athenæum	38	12	6	28	6	0
Derby, Working Men's Institute	3	15	0	2	19	8
Dudley, Mechanics' Institution	16	12	0	13	12	4
Durham, Mechanics' Institute	3	11	6	2	12	5
East Retford, Literary and Scientific Institution	1	0	2	0	16	7
Hyde, Mechanics' Institute	6	1	6	4	15	4
Leicester, Mechanics' Institution	5	15	6	4	8	9
Melbourne, Mechanics' Institution	13	14	1	10	6	8
Royston, Mechanics' Institution	6	13	6	5	2	7
Sevenoaks, Literary and Scientific Institution	1	12	7	1	3	11
Stamford, Institution	0	15	9	0	13	0
Wolverhampton, Athenæum	12	6	10	9	11	1
	£110	10	11	£84	8	4

Being a saving of £26 2s. 7d., or nearly 24 per cent.

CHALON EXHIBITION.

This collection of the works of the late John James Chalon, Esq., R.A., with a selection of those from Alfred Edward Chalon, Esq., R.A., was opened to the public yesterday. The private view took place on the day previous, when there was a very full attendance of the members and their friends.

TRADE MUSEUM.

A meeting of gentlemen interested in the application of Science to Arts and Manufactures took place at the Society's House on Tuesday evening, the 5th inst., for the purpose of examining the Animal Department of the Trade Museum, recently formed under the joint authority of her Majesty's Commissioners for the Exhibition of 1851, and the Society of Arts.

Amongst the company were Messrs. B. C. Brodie, F.R.S.; J. P. Bull; C. Enderby, F.R.S.; R. T. Fauntleroy; Sir John Forbes, M.D., F.R.S.; F. Fuller; J. P. Gassiot, F.R.S.; J. Glaisher, F.R.S.; G. Godwin, F.R.S.; N. Gould; P. Graham; Prof. Grant, F.R.S.; J.

Sparkes Hall; G. N. Hooper; S. M. Hubert; Capt. Ibbetson, F.R.S.; Sir Robert Kane, F.R.S.; A. Lapworth; J. R. Lavanchy; Matthew Marshall; J. J. Mechi; Prof. W. H. Miller, F.R.S.; Prof. Partridge, F.R.S.; Col. Portlock, R.E., F.R.S.; C. A. Preller; G. Rennie, F.R.S.; W. W. Saunders, F.R.S.; P. L. Simmonds; A. Smee, F.R.S.; Col. Sykes, F.R.S.; C. R. Weld; J. O. Westwood; J. Whatman, M.P.; Prof. Wheatstone, F.R.S.; Alderman R. Wilson (Bramley); T. Winkworth; J. Yates, F.R.S., &c., &c.

ON THE COMMERCIAL PRODUCTS OF THE ANIMAL KINGDOM.

By P. L. Simmonds.

The admirable collection of animal products which has just been opened for the inspection of the members under the auspices of the Society, is eminently suggestive, and calculated to be of great service to the interests of Commerce and to the progress and improvement of Manufactures generally. Forming the nucleus of what must eventually of necessity expand into a vast and highly important Trade Museum, it shows how easily instruction and information may be conveyed to the mind in a popular form through the eye, by a gradual progression from the rough raw material up to the finished product, illustrated in its different stages by the various tools, appliances, and general results of skill, industry, and experience.

Although Professor Solly has displayed great taste and judgment in his artistic arrangement of the various cases, so as to form a general grouping of a most attractive character, pleasing and interesting even to the most uninformed and ordinary examiner, the collection is obviously intended for much higher purposes.

Its sources of instruction—its commercial statistics and general comparative details have yet to be developed and elaborated, subject by subject, and class by class, in a well arranged catalogue and by popular descriptions, for I fear Professor Solly assumes too readily that in this scientific and educational age all have made themselves acquainted with the nature of the substances collected, and the ordinary processes to which they are subjected in various stages of manufacture. Even among those closely identified with these subjects, I think it will be found that a large number scarcely come up to this standard, and some are lamentably ignorant, not only of the sources of supply of the very articles they deal in and work up, but of many other points most essential to be known. Many will also plead that they are too onerously and actively engaged in the actual business relations of their trade and manufacture to search out and investigate for themselves new products, new improvements, new tests for the detection of adulteration, &c., but are delighted to have these familiarly brought home to them by the scientific enquirer.

Hitherto we have had no collective series of *animal products* open for inspection, although the field of inquiry is a wide and important one. Vegetable products and mineral substances have on many occasions been made the topic of investigation, and there are several good collections extant, but the animal kingdom has been comparatively neglected, and the only opportunities afforded for acquiring information have been by zoological collections of living species, museums of stuffed animals, or periodical cattle shows. As to the varied commercial products furnished by animals, the information even at the present day is of the most meagre description, and yet there is not a family or a class of animals which does not supply numerous important and very valuable products for the use and benefit of mankind, more especially as regards food. The tenants of the sea, the land, and the air, are all, more or less, useful to man, and there is much yet to be learnt respecting them, by comparison, investigation, and inquiry. Every day, indeed, adds to our stock of knowledge in this wide field, and proves that there is not an animal substance which may not be turned to some profitable account. The mere question of food is a most interesting study, and one on which there is much to learn, even from savage tribes. We find that they live and thrive upon the most repulsive and unpromising species of animal food, and that they also make use of many substances for useful purposes which have been long overlooked and neglected by us. The food delicacies of various nations derived from the animal kingdom would of itself form a curious study, and one from which we might derive some useful hints. We may be disposed to smile at rats and dogs, and horseflesh; at seals and sharks' fins and sea slugs, at snakes and lizards, snails and frogs, and locusts, as common articles of diet, but these serve to show the ready adaptation of the frame of man to seemingly loathsome food, and what habit can do to form the taste.

The investigations of science and the applications of mechanical skill are, it is true, furnishing us from time to time with various excellent substitutes for animal substances. Thus, the strong horsehair-like fibre of the kittool and of the ejoo palms, and galvanised wire, are substituted for bristles in brushmaking. Gutta percha hose and fire buckets take the place of leather. Caoutchouc is now moulded into admirable combs, less liable to fracture than those of bone and tortoiseshell. Vegetable ivory, from certain palms of South America, comes into use for small turnery wares, for which the tusks of the elephant and the teeth of the seahorse were formerly used. Even human teeth, largely in demand by dentists, are now artificially manufactured on an extensive scale by the Americans from ground quartz, pressed into moulds, coloured, and burnt to harden them. One firm in New York (the *Journal of Commerce* informs us) employs 30 men in this business, and turns out 3,000 teeth per day. Porcelain buttons are replacing to some extent pearl and bone buttons. The extensive use of gas for illuminating purposes, and the large supply of numberless vegetable oils and fats for the manufacture of candles and soap, has caused less attention to be paid to the whale fisheries. Split canes take the place of whalebone for the ribs of umbrellas. Artificial leather and vegetable substances for stuffing couches, beds, and chairs, are other instances.

For the purposes of food, however, man, from his omniverous character, must always be largely dependant upon the animal tribes, more especially in the temperate climes and colder regions. Fish, flesh, and fowl, will ever, therefore, be in increasing request as population multiplies, and animals, wild or domesticated, will as a necessary consequence, continue to be snared, bred, and slaughtered.

In the recent instance of the allied troops in the Crimea, where large masses of men were pent up in a small space, dependant entirely for sustenance on extraneous supplies, in the case of a failure (owing to stress of weather) to obtain cattle for slaughter, how vitally important it would have been to have had on hand a stock of dried or cured animal food, of a varied nature, and if possible in a concentrated and portable form. The best modes of preserving food, of curing meats, of salting and drying fish, of cooking these in the most palatable form, and with the least possible waste,—all these are very important elements of knowledge in certain situations.

Again, as respects warm clothing, a large supply of sheepskins, buffalo robes, seal skins, camel's-hair rugs, boots and shoes, &c., were required at short notice, and the Government were ill-informed of the probable supply and ordinary prices of many of these articles, or where they were to be obtained best.

Surely such points as these, where the comfort—nay, the very existence—of thousands of men were at stake, to

say nothing of the importance also of supplies of the raw material to our manufacturers, bespeak the necessity of accumulating all kinds of information that can be obtained relative to every product calculated to benefit Commerce and the Arts.

The information furnished to the members of the Society up to the present time on animal products, has been for the most part of a very general character, with some few exceptions, such as the learned and valuable lecture by Professor Owen, on the Raw Materials of the Animal Kingdom, that of Mr. Forbes, on the Woollen Manufactures; and of Mr. Dickins, on the Silk-worm and its Products. Incidental mention is indeed made of some of them in the lectures of Dr. Royle, on the Arts and Manufactures of India, Dr. Lindley on Substances used as Food, in my own paper, on Undeveloped and Unappreciated Raw Products, (page 39 of this volume), and in the Reports of the Juries of the Exhibition of 1851. But what is much wanted, is special descriptive accounts and recent details relating to particular animal products from particular countries—as respects their extent of supply, commercial value and application to the arts and manufactures—considered specially in a utilitarian point of view, by comparison with the practice and results of other countries. Historical essays, tracing down the processes of manufacture—the origin of inventions, the rise and progress of particular trades, and the legislative enactments affecting them, are curious and interesting for reference and indicative of much literary research on the part of those who undertake them. But these will scarcely bear the test of that *cui bono* inquiry which is now applied to everything by men of business and manufacturers. There is ample scope for the supply of much valuable and desirable information, which might be elicited by the Society of Arts on a variety of subjects connected with the animal kingdom. For instance, a good treatise on the commercial products of the hog is a desideratum, in order to stimulate our colonists in different quarters to enter more largely upon this profitable branch of rural economy. Why is this domestic animal so little appreciated in the British possessions, when the hog trade of the United States is something enormous. The mere list of its products is an extensive one, and all are of a profitable character—so that not a particle goes to waste. In the United States, the hogs of commerce (that is exclusive of those killed for home consumption) number upwards of three millions. The products consist of hams, and shoulders, and sides, forming pork and bacon to the extent of about 110lbs., each pig being computed to average 200lbs., although some have been fattened up to 1200 lbs.; fine leaf lard, in the proportion of upwards of one-eighth of the weight, is obtained, and occasionally a quantity of lard oil is also made; the head and feet weigh about the same proportion as the fat or lard; hog skins and bristles, and the cleaned entrails for sausage and polony cases; prussiate of potash from the blood and bones—and the refuse as manure, make up the list of valuable products of this one domestic animal, raised and fattened at a very small expense on maize.

The improvement of the breed and management of sheep in our colonies is another subject requiring attention. More care in the preparation and packing of the fleece is necessary, and inquiry should be set on foot in order to ascertain how it happens that the relative weight of wool abroad falls so far short of that obtained at home. A good report on the commercial products of many wild animals that can be obtained in large quantities in various districts, is also very desirable. Even in respect to the insect tribe and sea fowls we have much to learn, particularly on the lac insect; varieties of wax, the culture and preparation of cochineal; the products to be obtained from the different sea fowl; the numberless dainties of foreign birds which could be brought home at considerable profit, prepared in various ways—in some quarters frozen in ice, as is the practice in the north of Europe; in others salted and smoked, after the fashion of the wild pigeons thus cured by the North American Indians; or boiled in their own fat, like the mutton bird of the New Zealanders. Our gourmands would duly appreciate the excellent flavour of the tender flesh of the clucking hen of Jamaica, the best wild fowl of the country, which partakes of the mingled properties of a compound of ham, partridge, and pigeon, if they could but have it brought to their tables. The young mangrove hen, a species of rail indigenous to the same island, I have found to combine the peculiarity of flavour of the snipe and the sanderling with the fleshiness of the quail.

The importance of feathers for the purposes of dress and ornament is alluded to in an article on Plumagery, by Dr. Macgowan, republished in the Society's Journal, page 93 of the present volume, where modes of weaving feathers and interweaving them with silk are described. The Chinese and Aztecs appear to have made elegant and costly garments of feathers. The gorgeous feather robe of the Sandwich Island monarch, made from the feathers of the rare bird (*Melithreptes pacifica*), which has been added to and improved in its fabrication through eight successive monarchs' reigns, is valued at a million of dollars! Flowers, and tippets, and muffs, and other articles of ladies' attire, are still made of the choicest feathers.

The fisheries of the various seas, rivers, and coasts is a sadly neglected subject. We have indeed scarcely any correct lists of the fishes frequenting peculiar localities, their commercial value, the modes of capture and curing them. Hooks, lines, nets, bait; habits of the fish, whether migratory or local, whether used for food or manure, or only taken for their oil—all these are points to which inquiry might be profitably directed. The various Chambers of Commerce, the harbour-masters, and agents for Lloyd's could be specially addressed on these subjects, and would certainly facilitate such inquiries. The scientific culture of fish is now occupying a considerable share of attention in this country and on the continent, and the desirability of introducing the spawn of salmon and other fish into our colonial rivers in Australia, Van Diemen's Land, and elsewhere is of importance.

In view of the great value of leeches in the Materia Medica, some enterprising Frenchmen have recently been leasing marshes in Ireland, and sowing them broad-cast with leeches, in the hope of deriving large profits therefrom, that is, if the artificial or mechanical leech does not supersede the natural blood-sucker. Seven or eight million leeches are imported annually by three or four firms in London, and the value of those used in France is estimated at £200,000 to £300,000. The trade in no article, however small or trivial, should be lightly estimated, when we consider what fortunes have been made by enterprising men out of the most unpromising and seemingly unimportant articles. The human hair harvest of France—the flowing locks parted with reluctantly by females—amounts to 100 tons a year, of which we import about 50 tons for the use of our hair-workers for artificial tresses, braids, and wigs.

There are many substances of the animal kingdom used in pharmacy of considerable importance; and others possessed of valuable curative properties, are from time to time being discovered. Those who are in the habit of consulting the pages of the *Pharmaceutical Journal* will find that products of animals enter largely into the Pharmacopœia.

Dr. T. Thompson has pointed out the medicinal value of various animal oils besides cod-liver oil, such as sperm and seal oil, and the result was a conviction that fish oils generally resembled one another in their remedial properties, although differing in their aptitude for digestive assimilation in the human stomach. He tried neats-foot oil, an animal oil obtained from a soft solid fat found between the parchment and the leather skin of animals, also an oil obtained from a species of fish abounding on the Malabar coast; and these trials were frequently attended with encouraging results.

The practice of daily inunction is common in many warm countries, and serves to soften the skin, and keep the body in health. In some regions vegetable oils are chiefly used; cocoa-nut and castor oil by the negroes in the West Indies, the East Indians, and the natives of the Pacific Islands; palm oil, nut oil, and ghee, or fluid butter, by the African races; olive oil on the shores of the Mediterranean, &c. The New Zealanders and some others use shark oil; the Esquimaux and Greenlanders imbibe large quantities of train, seal, and various fish oils, whilst the natives about the large rivers and coasts of Brazil use turtle oil and fat obtained from the alligator and crocodile.

Those who are employed in the woollen trade, soap and candle and other factories, where oils and fats are largely used, enjoy a comparative immunity from scrofula and phthisis. Sailors believe a whaling voyage to be a cure for consumption, and probably the quantity of oil drank and taken into the skin may have its beneficial effect upon the system.

In the paper which I read before the Society in November last, I made mention of the commercial products of the dugong (*Halicore indicus*), an animal which although occupying a wide range in the Indian Ocean and eastern seas from Ceylon to Port Phillip, has hitherto been comparatively unappreciated. The oil obtained from the blubber has, however, very recently been brought into notice by medical men in Australia, as a new therapeutic agent, possessing all the advantages of cod liver oil, without its nauseous taste and smell. It has also been successfully used in diseases of the ear, and is further represented to be a good depilatory. The smooth blackish blue skin, which is about three-fourths of an inch thick, has not (that I am aware of) been yet applied to any useful purpose.

The fat of the emu will, if properly boiled down, produce about two gallons of oil, and this oil is also stated to be a very successful restorative in cases of rheumatism.

In the foregoing discursive remarks, my object has chiefly been to stimulate inquiry, by calling attention to the comparatively unexplored field of the animal kingdom, especially as regards its commercial products. Even in the interests of zoology much remains yet to be done, and the hints and suggestions of Professor Owen, in the Admiralty "Manual for Scientific Inquiry," may be studied with advantage by very many who have opportunities for collecting specimens abroad and furnishing information. The valuable and extensive researches of Mr. C. Darwin, in his "Voyage of a Naturalist," prove how much may be done by any one individual enthusiastically devoted to scientific pursuits, and losing no opportunity of throwing light on unknown or doubtful topics.

A careful study of the various series of products and manufactures as arranged in the Trade Museum by Professor Solly will, I am sure, convince many how scanty and superficial has been until now their general knowledge of the different subjects illustrated, and, I trust, induce them to aid in the good work of supporting such an establishment by stimulating contributions from friends at home and abroad.

SCHOOLMASTERS' ASSOCIATION.—ELEMENTARY SCIENCE IN SCHOOLS.

A large meeting of schoolmasters and schoolmistresses took place at the Sanctuary, on Saturday morning, to hear an address from Mr. J. C. Buckmaster, "On the Importance of Elementary Science as a branch of National education. He commenced his address by showing that the kind of education generally given to the children of the middle and working classes was in no way adapted to the practical requirements of life. In our ordinary schools boys were taught a little arithmetic, a little geography and history, and perhaps a little grammar. In what were called the better class of schools, boys were kept thumbing Latin and Greek grammars, to the exclusion of almost every other kind of knowledge; at the age of 14 or 15 they went into the world without a particle of useful available information. What was the result? Disappointment and discontent; labour was tedious and irksome, because they were unable to interpret its laws, Strikes, lock-outs, combinations, intemperance, and idleness, were the natural consequences of this ignorance. The common phenomena around them was a blank. The book of nature was open, but its pages were without consolation or instruction. After pointing out the advantages of a general acquaintance with science, especially those sciences which bear directly upon industrial pursuits, he sketched out a plan by which he thought regular instruction in science might be given in elementary schools. When persons talked of teaching common things, they often forgot that a considerable acquaintance with science was often very necessary for the successful teaching of common things. A subject which is only imperfectly understood by the master cannot be properly taught; he, therefore, suggested that there should be separate masters to teach science, as it was unreasonable to expect one man to teach everything efficiently, except in very rare cases. He then alluded to the great want of suitable mechanical apparatus and text-books. Every school ought to have good models of machines in common use, not for purposes of decoration and ornament, but for the purposes of instruction. A good working model of a steam-engine, so that it could be attached to other models, such as a common pump, a crane, a system of pulleys, a paddle-wheel, &c., all this might be done with great practical benefit. A boy who could work Proportion might work out many useful problems in mechanical science. Chemistry he regarded as the most important of the sciences, and one which could be easily taught in most schools. Metallurgical operations, the manufacture of gas, dyeing, bleaching, printing, brewing, cooking, the Davy lamp, respiration, and combustion, were all intimately connected with chemical science. The experiments gave the subject additional interest, and fixed the facts permanently in the mind. In a short time the boys obtain a great amount of useful information; their ingenuity will be exercised; they will begin to construct apparatus and perform experiments. I am not speaking, said he, imaginatively, I am telling you what actually takes place at a school at Wandsworth, which has recently been established with great liberality, for the express purpose of teaching the applications of science to the industrial purposes of life. This school has been most successful; it is well attended by the children of artizans and tradesmen. The people appreciate this kind of education because they often feel the want of it themselves. In teaching science the master should strive to teach a little thoroughly, rather than a great deal superficially. He then referred to what he described as the sciences of observation—natural history, botany, and geology. The two last sciences, he thought, might be developed to a very considerable extent, especially in the country. Boys should be encouraged to make collections of the characteristic natural productions of the neighbourhood—a small collection of plants, stones, insects, &c. Prizes should be awarded to the boys who made the best classification. By these means you would be laying the foundation for those habits of thoughtfulness and observation which would be a never-failing source of happiness and delight. To teach a boy that which will be useful to him as a man—to give him that knowledge which will enable him to adapt himself with little inconvenience to the varied circumstances of life—to inculcate habits of self-reliance and self-respect—to provide a support for his weakness and imperfection—to raise and refine his thoughts by the contemplation of nature and the progress of human knowledge, is, in my opinion, the highest and holiest mission in which man can be engaged.

The address occupied upwards of an hour, and was listened to with great attention.

FLAX AND ITS PRODUCTS IN IRELAND.

CONTRIBUTED BY WILLIAM CHARLEY, SEYMOUR HILL, BELFAST.

LETTER XII.

No raw material or textile manufacture has been improved more gradually than flax and its various products.

It is stated by a learned professor that on the walls of the ancient temples of Egypt, in addition to the records of military glory traced by the cunning hand of the artist, the peaceful ways of agriculture are not forgotten, and drawings of men carrying water to fill wooden vats, supposed to be intended for flax-steeping, are distinctly visible.

Yet in modern times some of our flax reformers propose to do wonders "all at once," and to break through the old fashioned, but not unsuccessful routine, with most sweeping innovations.

A leader among this class of enthusiasts was Mr. Lee, to whom I have already devoted some attention (see letters IV. and V.). He flourished in 1816. Of late years the most distinguished pioneer in this "fast corps" is the Chevalier Claussen. In 1851 his new plan was much talked about, and samples illustrative of his system were exhibited at the Crystal Palace. The Jury (Class XIV.) did not pronounce any opinion on the merits of the proposal, not wishing to crush any new idea that had not been well tested and fairly tried, but the practical men on the jury, I know, held an opinion not favourable to the flax cotton.

It certainly does appear a rather Quixotic undertaking to reduce a fibre, possessing so much value and strength as flax, to the level of the lower priced and less durable cotton. Is it not the aim of most noted Manchester manufacturers to imitate linen, and approach as near as possible to it in the appearance and style of cotton goods? Besides, a pound of dense flaxen fibre would not produce nearly as much yarn or cloth as a pound of the more bulky cotton, and the pound of flax would be worth on an average fully *double* as much money value as the other fibre.

To turn cotton into flax would be *real promotion* to the former; to attempt reducing flax to cotton is not, and cannot be, a step in the right direction.

The Committee of the Royal Flax Society of Ireland have expressed views similar to those held by myself and many others, and have recommended M. Claussen to give up persevering with the valuable flax fibre, and try his hand at the *refuse tow*. This may perhaps be more fortunate, and some improvement may eventually result in this *branch* of preparation; it would certainly be gratifying, should this gentleman after all his exertions attain even partial success in promoting some genuine reformation in any branch of the linen manufacture. To cottonise refuse tow is a plausible speculation, for good cotton is superior to very bad linen.

The celebrated Louis Crommelin alluded to in letters I. and II., writing on the subject of preparing flax without the watering process, A.D., 1705, says, "flax may be prepared without watering, by grassing it until such time as the straw corrupts, yet it is better to water it where it can possibly be done without great inconveniency." To overcome this "inconveniency," many projects have appeared from time to time. In 1775, Lady Moira (an Irish peeress) brought the matter before the Society of Arts, her attention having been directed to the subject by a talented Swede, named Des Charmes.

His idea was to cottonise flax, of course omitting the tedious "retting process," but after due consideration the proposal fell to the ground. It is said Barthollet and Gay Lussac were penetrated with ideas similar to those of Des Charmes, and considered the production of "flax cotton" a feasible undertaking; neither, however, carried out the attractive theory in *stern* and solid *practice*.

This M. Claussen has the merit of attempting to do; his process, so far as I can learn, is 1st, to steep the flax fibre or tow in a weak solution of caustic soda, cold, for 24 hours; 2nd, to boil it in a similar solution for two hours; 3rd, saturation for one hour in a vat containing 5 per cent. of carbonate of soda, followed by immersion in another vat containing water, with about ½ per cent of sulphuric acid added. The sudden chemical action on the fibre in the last steep produces singular results, and gives it a peculiar bright and cottony appearance. It is, however, evident that the "inconveniency," *i.e.*, the watering process, troublesome as it unquestionably is, will extract less of the oily and toughening matters of the fibre, called "nature" by the spinners, than such a series of boiling and chemical operations as I have just described. The spinners are thoroughly practical men, and they all, I believe, still prefer the old watering process to any yet discovered, not from prejudice or partiality, but from the acknowledged superiority of flax prepared in that way, to any other in the *spinning quality* so much esteemed.

Among the most successful of practical improvements in the common retting process, is that introduced and patented by Mr. Shenck. The principle of this plan is simple and easily understood. It consists in substituting for the irregular action of the out-of-door watering pools, the certain and regular effect of water heated to a given temperature under cover, so as to hasten the desired fermentation so necessary to separate the pure fibre from the woody and gummy portions.

The water is heated by steam in the vats containing the flax, and any temperature required can easily be attained; about 80 or 90 degrees Fahrenheit have been found the most suitable, and the entire time occupied does not exceed 60 or 70 hours. For some years this patent system stood high in public favour, and the fibre approached very near in texture that prepared in the old way; latterly it appears to be making no great progress, and I am afraid, from what I hear, that in a financial point of view the plan was not sufficiently remunerative, in fact I do not think "it paid well."

It is, however, generally thought that Shenck's system is a fair and feasible improvement, and it is hoped will yet be more adopted than hitherto, with such qualifications and additions as experience may suggest.

Louis Crommelin quaintly says, "It is impossible to prepare flax without grassing; the effects or influence which the water has on it is only that water rots the straw and makes the flax easily separated from the straw, but does not contribute to the making your flax to separate one thread or fibre thereof from the other, wherein consists the use of grassing your flax, for this it is that makes your flax to be finer or coarser when you come to spin it with respect had to each species or sort of flax." This was written 150 years ago, and yet remains on this day a sound opinion. The want of grassing, or "crofting," as it is sometimes technically called, is a defect in many of Shenck's patent establishments, and I think if this process were made an "addenda" to the fermentation in vats, the result would be more satisfactory to all concerned, and would tend much to improve the spinning quality of the fibre produced.

To carry this out right, the establishment should be in the country, at some distance from any smoky town chimneys; a few nice grass fields should be selected convenient to the rettery, for the purpose of receiving the flax after removal from the vats.

Besides this additional process, I think several economical arrangements might be introduced so as eventually to make the business remunerative and encouraging, two very necessary points in all speculations.

A few patriotic individuals might carry on a new business for a time at a loss to themselves, but unless such institutions are self-supporting, or derive funds from the State, even the most high-minded become wearied, and finally retire.

Dr. Stephenson, of Belfast, stated in a pamphlet published in 1808, that a Mr. O'Reilly had proposed improvements in the old plan of fermenting flax, which were well worth testing, but which the prudent doctor recommends should be tried first on a *smale scale*, and afterwards

increased in proportion to success. One of these new plans was *to boil the stalks in pure water*, or, if wished to ferment more speedily, in a caustic mineral alkaline ley. The other plan proposed was, to suspend the flax in a steam tight chamber with a boiler attached, from which steam was to be introduced; that from a weak caustic ley being thought best for the purpose, though in reality there could be no difference.

It is curious how similar ideas strike intelligent minds when absorbed in the study of a particular subject, and how the germ of many modern improvements can be traced in the writings and recorded sayings of clever men long since passed away.

I feel quite sure that neither Mr. Shenck nor Mr. Watt ever read the pamphlet I have just quoted from, as copies are very rare, and only to be had from a few gentlemen resident about Belfast, yet every one must admit the first plan of O'Reilly plainly shawdows forth a system like Shenck's, while the second seems to point out the new system patented by Watt.

I do not wish to detract in the slightest degree from the credit due to the latter-named gentlemen, who have devoted so much time and attention to the *practical* improvement of the retting process, but I wish to shew that the idea had many years ago occupied the attention of talented men *in Ireland*, and though not carried out *in practice* the principle was announced for the consideration of practical men, and a fair trial suggested and recommended.

Having briefly explained the patent system of Shenck, an outline of Watts's still newer system will be necessary. This differs in some points very materially from Shenck's. Instead of any fermentation, boiling and crushing are substituted, and the unpleasant smell caused by the retting of the flax is thus avoided. It is still a matter not decided whether the flax fibre is or is not in as good condition for spinning and bleaching as under the fermenting process hitherto employed. The advocates of Watts's plan maintain that there is more yield of fibre, and that the quality produced is equal to that of the old process; while, "*au contraire*," the opponents of the system object decidedly to the boiling or steaming, and say, without fermentation the fibre is deficient in spinning and bleaching qualities. I will not venture to pronounce an opinion at present, but knowing that Mr. Watt is a clever man, and is well supported by his friends, the Messrs. Leadbetter, of Belfast, I venture to indulge a hope that he may eventually overcome the difficulties pointed out by those not yet converted to the system, and I am sure all reasonable minds will accord to him their warmest sympathies in any efforts to systematise the old-fashioned and rather uncertain open-air process of retting.

In Watts's rettery the flax is placed in an iron steam-tight chamber, with a cistern on the top to act as a condenser. The steam is introduced at the bottom; it heats and softens the flax, and being condensed to water on contact with the roof of the chamber, falls down again, washing the flax thoroughly on its way. After undergoing this process for from 12 to 18 hours, the flax is removed, and immediately passed through between heavy rollers, by the action of which it is pressed nearly dry, and is so flattened as to lessen the adhesion of the epidermis to the woody and fibrous portions of the plant, and thus makes the cleaning that must follow a more easy operation. From the rollers the flax is transferred to the drying-rooms, of course heated by steam, and after this it is ready for the scutching process.

The arrangements of the rettery I inspected were carried out under Mr. Watts's personal inspection, and were regular and business-like. The flax was received in the straw, and was delivered scutched and ready for sale to the spinners.

There have been many other reforms in the retting process proposed by various individuals at different times, but I do not think any of them of sufficient importance to require special comment.

Home Correspondence.

REFORMATORY DISCIPLINE.

SIR,—I have received the following very interesting letter from my friend, Mr. Bengough, who, together with Mr. Barwicke Baker established the Reformatory at Hardwicke. I have obtained his permission to send it you for insertion in the *Journal*.

I wish much that more unity could be achieved. But so long as Mr. Power and his party urge the remission of all punishment for the crime committed, I fear it is hopeless.

It is impossible for us to say that the punishment which society requires in its defence, in order to deter the future commission of crime by others as well as the offender, is a punishment necessarily reformatory to the recipient. It may or it may not be so. Most assuredly it is not asked for as an atonement of the offence; for it is none whatever. Just as little is it *vindictive* in any proper sense of the term. It is inflicted simply because protection to life and property require it, and because all countries and all ages have sanctioned the equity and experienced the necessity of thus deterring crimes. Mr. Power also mistakes the facts when he says that it is cruel to apply this principle to young and little children. They who break the laws, and incur its penalties, are in a very large proportion, older children, who are perfectly conscious of their faults and deserts.

These are the only remarks which Mr. Bengough's able letter leaves me room to make. It is gratifying to me to find my own views so substantially and powerfully corroborated by one who has a practical experience on the subject; and has also thought deeply upon it.

I am, Sir,
Yours truly,
JELINGER SYMONS.

The Vineyard, near Hereford, May 26.

Exeter, May 11th.

MY DEAR MR. SYMONS,—I have been so much interested in the report of the paper which you read last week before the Society of Arts on the subject of juvenile crime, at which I was unfortunately unable to be present, that I should like to offer you a few remarks upon it. The discussion was, I think, well confined, under the advice of the chairman, to the root question, so to speak, of the whole subject—a child's responsibility, and consequent criminality and liability to punishment. I cannot think of anything more important than a reconciliation, if it be possible, of the conflicting views upon this subject; and one remark which fell from Mr. Power, Recorder of Ipswich, holds out the hope that in the direction to which it points a common ground may at last be obtained. I allude to Mr. Power's reply to Lord Lyttelton's observations, which in the report of the discussion in the Society's Journal stands thus—"I beg to say that I have no objection to any amount of punishment, so long as it is directed to the reformation of the offender. What I oppose is vindictive punishment, which has *not* reference to the reformation of the offender, but merely as some atonement to society, which he has offended." I think Mr. Power himself must admit that the tenor of the objections which he himself raised to that part of your paper which touched the question of punishment appears to go very considerably further than the interpretation which he puts upon them in the words I have just quoted, and it is, therefore, a matter of great importance to have gained a declaration so explicit from one who is sometimes supposed to be the great advocate for not punishing children at all.

In this admission, then, and the distinction between vindictive and reformatory punishment which all will allow to exist, I think will be found the elements of agreement between opinions seemingly so discordant as are those of Mr. Power and others who think with him and

those represented by yourself. Vindictive punishment, by its very nature, can never be of a reformatory kind; but there is a kind of punishment which is inflicted, not with any notion of making the offender *atone to society* for the injuries it has received at his hands, but as an absolutely necessary consequence to *himself* for the fault he has committed, as it is a *sin*. Against such a kind of punishment, to which alone, in strictness, the term ought to be applied, I conceive that, with one proviso, namely, that it should at least not be of a kind to *hinder* if it did not actually promote reformation in the subject of it—the opponents of a *vindictive* punishment could not with any consistency object. I need scarcely remind you how we have inspired authority to state that the infliction of this punishment is the province to which the Divine appointment of rulers has immediately destined them: this carrying out of the inseparable connection between sin and suffering, which it is one of the greatest exercises of faith to receive, and with many one of the greatest difficulties of reason. One great objection is, I know, advanced against our attempting to carry out this punishment now, in the impossibility of estimating the *relative* much more the *absolute* wickedness of any given crime. But granting this impossibility to the full, we should not, in the first place, be deterred by this difficulty from carrying out, as perfectly as we can, what seems to be an absolute duty imposed upon all who have the power; and in the next place, the *severest earthly* punishment which we could inflict would be, absolutely, not excessive for any real sin. To questions of how far the sanction of a human law can make that a sin which is not made so by the Divine law, I do not wish to turn aside. Theft, the main crime we have to deal with in the class of juvenile offenders, is a sin by the law of God. That it is a sin of much greater heinousness in those who know its nature well—who have had the advantage of good education and careful nurture than in those who, perhaps, do *not* know (if there are such,) that it is,—what they understand as it were by nature the force of—wrong I need not formally admit. But is it not to be punished at all in them? What, then, does our blessed Lord mean, when he speaks of "the servant who knew *not* his lord's will," but is *yet* to be "beaten with few stripes because he did it not." The infliction of punishment, indeed, I cannot but consider a paramount duty of those who are entrusted with power; but as I have already intimated, I as firmly believe that, except where such is the direct command of Him from whom all power is derived—all *human* punishment should seek, what all *His* punishments in this life at least, with perhaps some singular exceptions, do seek—the reclaiming the sinner from his sin. Now, say that a poor child just taken from the kennel does not know that he has done wrong in taking that which was not his own, will he not be the more likely to remember in aftertimes the lesson that it *is* wrong, because he receives with it that other lesson—that wrong *deserves*—by a higher law then man's, and by a higher appointment is here to *receive*—pain. Nothing indeed can be more futile—a more entire departure from that great example which all rulers ought to imitate than *so* to punish, *not* the incorrigible and hardened, for of them we are not speaking, but the weak and ignorant, as that it should leave them only more hardened in their sin. Futile it is because it injures that society which it is their object and duty to protect. But with the fullest admission of the Divine right of real punishment, I easily conceive the existence, which we perceive—of the very strongest objection to those which are at present practised among us, both for their nature and for their manner, partaking as they do much of the vindictive character, in which they are inflicted. I do hope, then, that it is here alone that that apparently great difference of opinion lies between the advocates for, and the opponents of, the punishment of juvenile criminals. I believe that we are all seeking in reality one object. To put an end to the worse than absurdity of treating a little child as the object of *vengeance* for the wrong! done to society, which is beyond doubt more sinned against than sinning itself in the neglect which it has suffered the child to grow up in; and we all, I think, see very clearly that imprisonment and our whole penal system, as at present conducted, can leave scarcely any other impression upon the child's mind than that he is so treated—can leave certainly very little of the impression that he must suffer *because he has done wrong*. But beyond that we all are agreed also, I believe, on the necessity of protecting society against at least any further injury on the part of the child, and, therefore, of reforming it before we permit it to have its liberty again. But although the two objects should ever be kept together in view, if what I have already observed with regard to the Divine obligation of punishment is true, the mere restriction of the reformatory process cannot rightly supersede it, as you remarked, or take its place. They are unpleasant, it is true—irksome to a painful degree, especially at first to the untamed spirit who must be subjected to them, but they are not inflicted *as* a punishment, and besides, in most cases, are nearly or quite counterbalanced by the regular comforts which are at the same time enjoyed. If, then, children who have sinned must be punished, (and the punishment, we must remember, inflicted on that ground—its only true one—reacts for the benefit of society as a deterrent of others, for which purpose primarily—as I believe—society would have no right *whatever* to inflict it), if, I say, children must be punished, and feel the punishment to be the necessary meed of their crime, it is, indeed, a most important question—how and where they are to undergo it. As to the place—though I confess at one time I was strongly opposed to the uniting of a penal and reformatory establishment together—the great difficulties which exist in making a child committed to even our best prisons feel the *real* intention of the punishment inflicted upon him there, and the exaggerated attention of which he is necessarily the object tending so strongly to inflate his pride, have considerably modified my opinions; and, on the other hand, I had not to *learn* to believe that if we can make a child understand *why* he has been punished, and why he must be detained after his punishment, our having punished him will no more interfere with that child's confidence, nay, his love of us, and the influence of our exhortations, and of our setting before him the pleasure of a reformed life, than punishment would deprive us, which God forbid, of the love of a child of our own. With regard to details, I would have the place or the appliances of punishment strictly different in outward aspect from the reformatory portion of the establishment, while the latter should present the *greatest* amount of liberty, with the *lowest* of rigidity or severity of discipline which would be compatible with the safe detention and orderly behaviour of the children. I may appeal to my own experience, as well as that of others who have been engaged in the same work, as to the superior reformatory influence which is at work where the fullest scope is given for individual action and the development of individual character. But before proceeding, as I should like to do by-and-bye, to the further consideration of this point, I will see whether it is not possible to reconcile the conflicting opinions as to *what* the punishment is to be. You will understand that I do not think it will be held that it need be *positively* reformatory, so long as it be not the *contrary* in its action. The reformatory process is to succeed it, and may begin when the punishment is at an end. I do not myself see, then, how we can dispense with either of the only two punishments which are possible to us—confinement of various degrees of strictness, and flogging. The latter, however, should only be inflicted in cases where there was any great aggravation of the crime, as in the knowledge of the offender, or the circumstances under which it was committed. But, practically, this consideration must be left to the judge who sentences the culprit. In cases of a first or very slight offence, however, I may suggest that confinement in separation, or even in association, if tole-

rably strict, and with silence enforced, would be sufficient. The terms should never be very long, and I am inclined to think that the extremest cases would be amply met with a flogging, followed by not more than a week of close confinement, and a subsequent longer term in association. To flog a lad and turn him into the streets again, is, I know, worse than useless; but I know also, from what the boys I have had charge of have told me, that the *first* flogging they ever had did produce a very wholesome effect for the time upon their minds, and I cannot but think, indeed I have seen myself that, inflicted solemnly, as a punishment, under the eye at least of the manager of the institution, and with everything to impress it upon the boy's moral feelings, it would have its effect; even where he had been flogged in prison repeatedly without effect, because in a mere formal, and often, I know, in an openly vindictive spirit on the part of those who inflicted the punishment, where a boy had been frequently in prison or troublesome while there. A sentence of, say, one month's imprisonment, then, should imply one week in close confinement, and three weeks in associated confinement, in entire or partial silence, with work and instruction. My own experience has led me to think that too high a value can scarcely be placed upon a short close confinement, unrelieved by occupation of any sort, and only by an occasional visit at the hours of meals. I have inflicted this myself with no injury to the boy's health, and a very great and decided benefit to his character. It was for an outrageous act of dishonesty on two boys at the Hardwicke school; I may therefore state, from my own experience, that to a lad of 13 to 15 it would not be an excessive infliction; a child of 11 or 12, I suppose no judge would think of sentencing to it.

With regard to the association of the boys under punishment, we must remember that after punishment they will be associated with as few restrictions as possible upon their intercourse, and that while under punishment they may if it is thought desirable, be associated in classes, according to the extent of their culpability, as measured by the length of their sentence of punishment.

On the whole, then, I conceive that the necessary punishment of the juvenile offender would be more probably efficiently carried out in an institution where only the boys—of course the same, with certain exceptions, will apply to girls—where only the young are to be dealt with. A person who may have every qualification for the governor of a prison where men are to be dealt with, would be very often little fitted for dealing with boys. The manager of a reformatory institution *must* seek far more than the other *need* do, to win the *affections* and confidence of the children. He should be the first to teach them, as I have said, the reason of the punishment which he is *ordered*, nay, obliged, to inflict upon them. He *should* have the power of pointing them on to the time when they *will* see him in a different light, of encouraging them to learn to look upon him from *the first* as their friend, and anxious to see them put where they may freely do well, first under his own eye, then, when they leave him at last, under only the eye of God. On the manager, be he clergyman or layman, be he called master, or chaplain, or governor, or what not, the whole success indeed of the institution will, under God, depend. It is not the rules—they may hinder or help him—but it is only the man, by his personal action, that can reform. And can the state find such men? Has the experiment been ever fairly made? There are two difficulties in the way of its success; first, that of steering between making the appointment so valuable as to tempt men to undertake it who have no sort of qualification for it, and of making it so little remunerative that many a man who might have the necessary qualifications would be unable or unwilling to enter upon it; secondly, that of allowing the person who is charged with it the very great liberty of action and freedom from interference, without which he could hardly hope for success. The particulars in which this liberty would be most essential, I should consider to be these:—The absolute power of appointing and dismissing every person employed in any capacity about the institution. The authority, within certain broad limits, of punishment, not subject to the questionings of visitors or inspectors, unless the occasions, as entered in a Journal, were so frequent as to justify an inquiry into his general management; thirdly, the assurance that his recommendations for liberty, partial or entire, to any boy, or even for the relaxation of any rule of the institution which he found on trial to work ill, would meet with the consent of those with whom the ultimate authority over the school might lie. I say the "assurance," and I would imply that it should be the province of the inspector to see that no rule was altered without his knowledge, but not to withold his sanction for any alteration, not fundamental, but concerning the details of the system, without positive cause existing externally to his possible private opinion. He should, besides this, have to take care that the money expended was duly accounted for, that nothing was ordered but through him, and he would be then quite a sufficient check upon the manager's necessary freedom. As I have spoken of some rules as fundamental, I am led to enter briefly, as I am desirous to do, a little more into the principles of reformatory treatment. I have already mentioned full liberty for individual action, and the development of individual character, as being almost at the foundation of all which can be truly called by that name. That the boys should have the most complete opportunity to speak and act as their nature prompts them; certain actions and certain subjects of conversation, or forms of speech—such particularly as any reference to the crimes of their previous life, should be decidedly and plainly interdicted, and as decidedly punished when they occurred,—the one just specified most appropriately by sending the offender back again to the punishment of silence in the penal ward. But within these limits, and with due regard to the maintenance of order, for instance, during the meals, and in the dormitory, and not allowing the boys by talking to neglect their work, no restriction should be sought to be imposed on them in this respect. In practice it will not be found that there is very much talking during work, and its permission will be amply repaid by the greater freedom of intercourse which will grow up between the boys and those who superintend their labours. On them a great deal of the success which may be hoped for will depend, which makes it the more important that their appointment and removal should rest entirely with the responsible manager of the institution. Their manner should be firm but kind. They should seek to encourage those who were doing their best, but felt their lack of skill: and for their own sake as well as for the example which they would show the boys, they should be actual workers with them. They must be numerous enough in proportion to the boys, (that there should be no lack of strength in such establishments, has been most forcibly and earnestly urged by Mr. M. D. Hill,) and they will find no difficulty in superintending, at the rate of a moderate number, say from 8 to 10 boys each. Here, again, I may appeal to the experience, first of Redhill, and then of the Hardwicke school, and I venture to assert that the superintendence which the labourers in those places exercise is fully as efficient as, and much more healthy in its influence than, that of the military warder of Parkhurst, against which place, however, I have no wish to make any invidious remark. With the exception of the penal ward, which should bear its character in its very appearance, as little evidence of restraint should certainly exist as could, with safety, be at all dispensed with. For all practical purposes of safe custody, the security of the dormitories would be almost the sole thing needed. The buildings connected with the ordinary requirements of life, *i.e.*, the washing apparatus, &c., might be readily so placed as that no boy could enter them or leave them unobserved, which would preclude the possibility of their making the use of them, at night for instance, to cover an attempt to escape.

Before darkness set in the whole of the boys should be mustered in the school or day room, previous to which time they of course should not have been for any time out of sight, either of the labourers, during their work, or of one of the school teachers during the time allowed for recreation (which would not be long) in a playground, so placed that he might command a view of the only exit from it. I think that such necessary securities against evasion as these might be estcemed fundamental parts of the institution, which an inspector should see rigidly carried out. Such also might be the regulated hours of work, sleep, instruction, and meals, while I can easily conceive that the manager of the institution might reasonably expect his representations of the desirableness of alterations in this respect, as the result of experience, to meet with careful attention. But in his desire to test individual boys, by allowing them much greater liberty than it would be safe to allow to all, it would be essential to give him all but an absolutely unfettered discretion, for with such only could he hope to create or strengthen in the boys' minds the sense of responsibility or the power of self-control. I should claim for him also the absolute judgment as to the fitness of a boy to leave the establishment. He should be able unhesitatingly to promise a boy, with the security of being able to keep his promise, that he should obtain on any given occasion his discharge. It is well known how greatly the success of the system devised by Captain Maconochie was interfered with by his being unable to fulfil the expectations he held out to the prisoners under his charge.

I have, however, by this time extended what I had intended to say to you, in connection with the paper and discussion to which I at first referred, much beyond what I had anticipated when I began. There is much, especially on the principle of reformatory treatment, which I have only imperfectly touched upon, but I think I have addressed myself to the principal points which that paper and discussion brought out, viz., the questions of the right of punishing children at all—of how they ought to be punished—and most important of all, of the possibility of, and the terms necessary to the enlistment of that agency by the State in its behalf, which has so abundantly, and on the whole, so successfully answered the summons of the voluntary labourers in the great public cause, the reformation of juvenile offenders. That the necessarily considerable responsibility which must be placed in the head of a reformatory institution, and the difficulty of securing the first attempt against the chance of being entered upon solely for the emolument connected with it, should render people of very different views adverse to the attempt being made at all, is not a matter of surprise. If it be made, and made wisely, the earnest attention of all who wish well to the cause, and I believe their fervent prayers, will be with an experiment which may be the first partial solution of one of the most difficult of our social problems; and as I believe the attempt will some time be made, we shall see, I hope, men casting aside their present prepossessions for particular systems, and contributing all the influence that their experience can bring to bear on getting it made with a well-considered and deliberate wisdom.

I remain, dear Mr. Symons,
Yours very truly,
G. H. BENGOUGH.

Proceedings of Institutions.

BRIGHTON.—The Fourth Annual Report of the Committee of the Mechanics' Institution, states that the number of members is now 392, having remained stationary during the year. The number of volumes in the library is 2,696, showing an increase of 241. The reading room has been much resorted to; a new feature in connection with it, and a remunerative one, has been the quarterly sale of the daily and weekly papers. The lectures have been so badly attended that the Committee has not been encouraged to fill up each course as they could have wished. The musical entertainments, on the other hand, have been very well attended by the members, but the expenses are so great that the Committee do not feel justified in adding to their number. The elocution class is the only one really in existence, notwithstanding that efforts were made sixteen months back with a view to the extension of class instruction, but only 5 names were enrolled for the geography class, 8 for the arithmetic, 5 for the French, and 9 for the Palestine one. A band in connection with the Institution promises to become an honour to it. The exhibition of photographs lent by the Society of Arts was, in a pecuniary point of view, a failure. The receipts during the year amounted to £215 1s. 10½d., the expenditure to £211 13s. 10½d., leaving a balance of £3 8s. in the hands of the treasurer.

YORKSHIRE UNION OF MECHANICS' INSTITUTES.—The eighteenth anniversary meeting of this Union was held at York, on Wednesday in last week. The proceedings were commenced by the meeting of delegates in the morning, at which 49 Institutions were represented out of the 133 in union. There was a full attendance of members of the Central Committee, as well as many visitors. Mr. S. Wilson having been called to the chair, in the absence of Mr. E. Baines, the president, who was prevented attending owing to indisposition, the secretary then read the committee's report. From this it appeared that during the year Mr. G. S. Phillips, the agent to the Union, had paid altogether 165 visits to the Institutions—having delivered lectures at 94, attended conferences at 56, and public meetings at 38. By means of these visits the Institutions are becoming more educational, the fees in some are being raised, and altogether they are becoming more efficient; and in the Stockton-on-Tees Institute, notwithstanding the fees have been increased, the number of members has increased from 390 to 455, or 65 during the year. After referring to the Literary and Scientific Institutions Act, 17 and 18 Vict., cap. 112, which gives the power of holding property, and of suing and being sued, the report goes on to observe, that "these are great advantages, and that they have accrued is owing to the existence of a Union of Institutes." One of the first instances of the beneficial results of the new law has occurred in the case of the Masham Institute, which has received the donation of a very excellent site from the Master and Fellows of Trinity College, Cambridge. The Wakefield Institute has received a donation of £500 from Mr. Daniel Gaskell, towards purchasing a building. There is another point in which the legal position of Institutes is, in the opinion of the committee of the Union, unsatisfactory, viz., the exemption from local rating, the Act 6 and 7 Vict., cap. 36, being open to interpretations which contravene the original objects for which it was passed. The committee express the hope "that the Society of Arts will vigorously take up this question, and cause to be introduced during the next session of Parliament such amendments in the statute as will faithfully carry out its spirit and intentions." The next topic alluded to is the Itinerating Village Library, which, it is conceived, will become an important department in the future operations of the Union; but the success of the plan depends much more upon the local librarians than upon the Central Committee. The present number of stations is 24; the total number of books is 2,100—divided into 42 sections, of which 17 sections are in hand. A donation of 211 volumes, handsomely and strongly bound, has been received from H.R.H. Prince Albert. If in every village where a library is located a comfortable reading-room were established in connection with it, no small amount of discomfort and positive evil, arising from the overcrowded dwellings of the labouring population, would be prevented. In addition to this there should be persons appointed to read aloud, which, coupled with the stimulus of conversation, would make such a village club a powerful

instrument for individual and social benefit. From returns sent in from some of the Institutes, it appears that 21 have commenced employing paid teachers who did not do so before, and that 24 have extended their class instruction. Only 13, however, have adopted the plan of visiting the pupils in case of absence. The committee are very urgent on the subject of class instruction, and they say that "Neither the library, the newsroom, nor lectures, nor all of them combined, can supply the absence of class instruction, because none of them can so bring the mind into intimate relation with the knowledge to be acquired. In miscellaneous reading and lectures, points of any difficulty are kept out of sight or passed over, but in class instruction they must be mastered, or further progress is impossible." In too many instances, it is observed, the original educational objects of the Institutes are departed from, and amusement takes the place of instruction. Now it is quite possible to unite both departments in one Institute, and those at Huddersfield, and Rotherham, and Masbro', are successful examples of this combination. With regard to a suggestion made by Mr. Harry Chester in a lecture on Mechanics' Institutes, at the Society of Arts Educational Exhibition, that a special committee should be appointed by each Institute, composed partly of its own members, and partly of non-members, to endeavour, first, to raise the average of the school age; and second, to induce the continuance of study after leaving school,—the report remarks that such a committee, "if it combined the managers of day and Sunday schools with the conductors of the Institute, might, by bringing proper influences to act upon youth and their parents, cause the Institute to be regarded as the natural sequence of the school, and materially raise the character and influence of both." / On the subject of female education, the report says:—"The reports and facts furnished by the Institutes show that, in two or three instances, increased attention is being paid to Female instruction. For instance, at Rotherham there are fifty females receiving instruction. At Bradford there are the same number. At Stanningley the Female classes succeed. There is, however, we regret to say, no proportionate progress made in Female instruction compared with its real importance. Everyone asserts the necessity of Female education, that it is more important than that of the other sex,—that the education of woman is the education of both man and woman begun in the right place, and other generalities are from time to time uttered on this suggestive topic. But as an admitted principle, demanding practical realisation without any further delay, it seems to meet with far too small recognition. The most noteworthy exception to this remark is in connection with the Leeds Institution, where a Girls' Day School, of very high character, is being established. The course of instruction, besides the ordinary accomplishments of the usual boarding-schools, comprise departments which *all* schools *ought* to embrace, and which will certainly confer upon the pupils advantages of no ordinary value, such as Natural History, Natural Philosophy, Elementary Chemistry, and Physiology." At the Churwell, Headingley, and Northowram Institutes Sewing Classes have been established, one person of superior education being employed to read aloud to the rest while at work. The report having been adopted, the following resolutions were passed. 1st. "That as a primary principle of the operation which the Union is to produce the greatest amount of good at the least cost, and as the most extensive part of its instrumentality is that connected with the office of the salaried agent and lecturer, it is indispensably necessary that whatever may economise his time and energy, and the outlay (whether borne by the Union or by the individual Institution) incidental to the discharge of his duties should be adopted and carried into practical effect. This meeting, therefore, hereby expresses its deliberate opinion that the irresponsibility of the visits of the agent to meet the particular convenience of Institutions, whereby he is compelled to make repeated journeys to one neighbourhood, entailing unnecessary expense and much waste of time, should be forthwith discontinued, and that the Union committee be requested to arrange a topographical employment of the agent's services, with defined circuits for certain periods, all the institutions having due notice of his visits. That it be understood, however, that this shall not preclude permission to the agent to accede to a special invitation from any Institution having urgent need of his services and being prepared to incur the cost of the visit, but this meeting respectfully urges on the Institutions in the Union the duty of generally supporting the committee in carrying out a topographical arrangement of the agent's visits." 2nd. "That this meeting, while expressing its satisfaction with the exertions of the Society of Arts in obtaining the Act 17 and 18 Vict., c. 112, giving a legal negociation and security for their property, would urge on that Society the consideration of the 6th and 7th Vict., c. 36, with the view of effectually securing its objects and removing the difficulties in its administration." 3rd. "That in the next list of premiums, offered by the Society of Arts, they be requested to offer prizes for class-books to assist, and more especially adapted to, the evening classes of Mechanics' Institutes." Some remarks were then made as to the best methods of increasing the efficiency of the evening classes of Mechanics' Institutes, and of combining reading-rooms with village libraries, after which the usual cash accounts were read, showing a balance due to the treasurer of £75 9s. 5d. The following Institutes were admitted into the union, viz., Crosskill's, Hartlepool Working Men's Institute, West Hartlepool, Wainsgate (Hebden Bridge), Kettlewell, Rufforth (York), Swillington, Shelley, and Tadcaster. The committee and officers for the ensuing year were then appointed, and it was resolved that the meeting next year should be held at Middlesbro'. The following resolution concluded the business of the meeting:—"That this meeting respectfully offers its most grateful thanks to his Royal Highness Prince Albert, for the countenance and assistance he has given to the Yorkshire Union Village Libraries, by presenting to its collection of books 211 volumes, selected by himself."—The delegates and their friends, to the number of 100, afterwards dined together, and in the evening there was a public meeting, which was addressed by Lord Goderich, M.P., Mr. R. M. Milnes, M.P., the Rev. Canon Hey, the Very Rev. the Dean of Ripon, Mr. J. D. Dent, M.P., the Rev. T. Myers, Sir W. M. E. Milner, Bart., M.P., the Rev. J. Kenrich, the Hon. J. C. Dundas, Mr. T. W. Wilson, Mr. Alderman Leeman, and others.

To Correspondents.

A Belfast Man is informed that provisional protection for six months is obtained on payment of a stamp duty of £5. On further payment of £15, three years' protection is obtained. To keep the patent in force for the whole term of 14 years a fresh payment of £50 at the end of the third year, and £100 at the end of the seventh year, is required. These are payments to Government, and are irrespective of the charges of a patent agent for preparing specifications and other documents, &c., which vary with each case.

*** A letter from Col. Sir Frederick Abbott, C.B., "On Public Works for India," has been received, and is in type.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Delivered on 26th, 30th, 31st May, 1st, 2nd, and 4th June, 1855.

Par. No.

257. Poor Law (North Dublin Union)—Minutes of Evidence.
258. Mercantile Marine Fund—Account.
65 (4). Trade and Navigation—Accounts (30th April, 1855).
253. East India—Territorial Accounts.
261. British and Colonial Spirits—Account.
263. Pupil Teachers—Return.

266. Civil Service—Copy of Order in Council.
274. Gibraltar—Copy of Dr. Baly's Report.
276. Canada—Copies of Address, &c.
245. Sugar, &c.—Return.
265. Cambridge University Bill—Copy of Letter.
260. Fire Insurance—Account.
262. Lunatic Asylums (Ireland) (Advances) Bill—Minutes of Evidence.
275. Spirits (Navy)—Contracts.
243. East India Telegraphs—Copies of Reports.
268. Metropolitan Commission of Sewers—Return.
269. Reformatory Schools—Return.
270. Smoke Nuisance Abatement (Metropolis)—Returns.
267. Metropolis Turnpike Roads—29th Report of Commissioners.
277. Artillery Officers (Woolwich)—Correspondence.
72. Bills—Public Health (as Amended by the Select Committee.)
120. Bills—Insolvency and Bankruptcy (Scotland).
142. Bills—Dissenters Marriages (Amended).
148. Bills—Criminal Justice (as Amended by the Select Committee).
150. Bills—Limited Liability.
151. Bills—Partnership Amendment.
149. Bills—Dwellings for Labouring Classes (Ireland).
150. Bills—Limited Liability (a Corrected Copy).
Railways—Reports upon certain Accidents (January and February).
Ordnance Survey—Treasury Minute, &c.
Railways—(Number of Passengers, &c.)—Return.
Public General Acts—Cap. 19, 20, 21, 22, 23, 24, 25, and 26.
Delivered on 5th June, 1855.
248. Supreme Court of Calcutta—Returns.
125. Bills—Justices of the Peace Qualification.
147. Bills—Ordnance Board.
Delivered on 6th June, 1855.
152. Bill—Episcopal and Capitular Estates (amended).
Turnpike Trusts—Sixth Report by the Secretary of State.

MEETINGS FOR THE ENSUING WEEK.

MON. Geographical, 8½.
TUES. Syro-Egyptian, 7½. Mr. Abington, "On the Origin of the Cuneiform Character." 2. Dr. Benisch, "A Critical Examination of the original Hebrew Text of the passages referring to the Exodus." 3. Mr. Lascellas Wraxall, "On the Natron Monasteries in Egypt."
Med. and Chirurg., 8½.
Zoological, 9.
WED. Literary Fund, 3.
Royal Soc. Literature, 4½.
Society of Arts, 8. General Meeting to receive the Council's Report and Statement of the Funds of the Society."
Geological, 8. 1. Prof. Owen, "On Remains of Dicynodon from South Africa." 2. Prof. Owen, "On a fossil Sirenoid Mammel from Jamaica." 3. Prof. Beyrick and Mr. Hamilton, "On the Brown Coal Formation of North Germany." 4. Prof. Nicol, "On the Metamorphic and Devonian Rocks of the eastern end of the Grampians." 5. Sir R. Murchison, "On the Fossil and Drift Wood in the Arctic Regions found by Capt. M'Clure and Lieut. Pym." 6. Commander Bedford, "On the raised Beaches of Loch Gilphead." 7. Mr. R. W. Fox, "On Sand-worn Granite." 8. Dr. W. Gilchrist, "On the Red Soil of India." 9. The Reverends Messrs. Hislop and Hunter, "On the Omret and other Coalfields of Central India." 10. Mr. Consul Sandison, "Notes on the Earthquakes at Broussa."
THURS. Antiquaries, 8.
Royal, 8½.
FRI. Royal Inst. 8½. Colonel Rawlinson, "On the Results of the Excavations in Assyria and Babylonia."
SAT. Asiatic 2.
Royal Botanic, 3¾.

ATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette June 1st*, 1855.]

Dated 15th May, 1855.

1097. R. Jobson, Dudley, and J. Jobson, Derby—Moulds for casting metals.
1099. G. T. Bousfield, 8, Sussex-place, Brixton—Wrought nails.
Dated 16th May, 1855.
1100. G. Saxon, Openshaw—Safety plugs for boilers and valves.
1102. T. Richardson, Leeds—Dyeing cloth.
1103. A. R. le Mire de Normandy, 67, Judd-street—Oily acids and soap.
1104. E. P. Plenty and W. Pain, Newbury—Ploughs.
1105. C. W. Siemens, John-street, Adelphi—Freezing water, &c.
1107. R. Jamieson, Ashton-under-Lyne—Forging machine.
1108. R. and E. Vezey, Bath—Carriage steps.
1109. J. H. Porter, Birmingham—Coupling blocks for roof trusses.
1111. R. Murdoch, Glasgow—Sowing seeds and depositing manure.
1112. W. Rye, Miles Platting—Railway wheel.
Dated 17th May, 1855.
1113. T. Dawson, King's Arms-yard—Cases for pen, ink, and stamps.
1114. A. M. Mennet, Paris—Ornamenting fabrics.
1115. J. G. Butt and J. H. Martin, Paris—Rotary engines.
1116. W. Johnson, 47, Lincoln's-inn-fields—Oily, resinous, and gummy substances and soaps. (A communication.)
1117. F. D. Blyth, Birmingham—Tea trays, picture frames, &c.
1118. J. Rae, Alpha-road, New-cross—Warming railway carriages, &c.
Dated 18th May, 1855.
1120. B. T. Warée, Paris—Sharpening pencils.
1122. J. Jeffreys, Kingston—Sun blinds.
1124. J. Cumming, Glasgow—Looms.
Dated 21st May, 1855.
1126. R. J. Stainton and E. C. Davey, 14, Holland-street, Blackfriars—Warming stoves.
1128. P. B. Eassie, Gloucester—Elliptograph.
1130. B. Nicholls, East-street, Old Kent-road—Buttons.
1132. S. Stocker, Brighton—Shaping machinery.
1134. T. Piggott, Birmingham—Telescopic gas holders.
1136. W. J. Curtis, Hardinge-street, Islington—Aeronautics.
1138. L. F. J. Ravenstin and C. Chatel, Paris—Blinds, screens, &c.
1140. A. F. Cossus, Cagliari—Treating oils, &c.
1142. J. L. Rey and A. Guibert, Marseilles—Submarine and preserving coating.
1144. A. H. Mentha, Manchester—Wadding.
1146. J. M. Murton, 3, Somers-place West—Sister-hooks and thimbles for ships' and boats' riggings.
1148. J. H. Johnson, 47, Lincoln's-inn-fields—Signals for nautical purposes. (A communication.)
1150. A. V. Newton, 66, Chancery-lane—Watches. (A communication.)

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

1106. R. Peters, 89, Union-street, Borough—Steam engines.—16th May, 1855.
1174. S. S. Putnam, Massachusetts—Forging machine.—24th May, 1855.
1175. S. E. Robbins, Vermont, U.S.—Fire-arms. (Partly a communication.)—24th May, 1855.
1177. Baron von Gilgenheinch, Widenau, Silesia—Machine for tilling land.—24th May, 1855.
1214. A. E. L. Bellford, 32, Essex-street, Strand—Ordnance and cartridges. (A communication.)—28th May, 1855.

WEEKLY LIST OF PATENTS SEALED.

Sealed May 25th, 1855.

2499. Félix Delacour, Paris—Improvements in fire-screens.
2524. Ellis Rowland and James Rowland, Manchester—Improvements in metallic pistons.
2552. Daniel Collet, Paris—Improvements in transmitting power.
2559. John Warhurst, Hollingworth—Improvements in furnaces or fire-places applicable to apparatus for heating water and generating steam.
2567. Christopher Hodgson and James Whitley Stead, Salford—Improvements in machinery or apparatus for washing or cleansing woven fabrics and clothes, part of which apparatus is also applicable to churning milk and cream.
2653. James Fenton, Low Moor—Improvements in the manufacture of axles, piston rods and shafts, girders, and other like articles.
129. Constant Jouffroy Duméry, Paris—Improvements in smoke-preventing apparatus.
230. George William Henri, Fishergate, York—A new compound or meal mixture for feeding cattle.
581. William Lister, Dunsa Bank, near Richmond, Yorkshire—Improved implement for raising or loosening turnips and other roots in the ground, and cutting off the tails thereof.
582. Henry Bach, Sheffield—Improvements in sash frames.
655. William Brown, Gresham-street—Improved mode of preparing sewing silk for the market.

Sealed May 29th, 1855.

2543. Edward Dowling, Little Queen-street—Improvements in weighing machines, and in their application to implements of transport.
2572. Ferdinand Cellier Blumenthal and Maximilian Louis Joseph Chollet, Paris—Preserving meats.
2599. François Jacquot, Bruxelles—Improvements in the lining of hats, helmets, shakos, caps, and similar articles.
2620. Peter Armand le Comte de Fontaine Moreau, 4, South-street, Finsbury—Improvements in photography.
2672. Jean Baptiste Falquière, Marseille—Improvements in apparatus and machinery for propelling boats and vessels on water.
2675. Joseph Gorton Briggs, Kingsland—Improvements in the manufacture of fuel.
2677. Joseph Tucker, 7, Guinea-street, Bristol—Improvement in the construction of ships for saving persons in case of shipwreck.
2714. John Francis Porter, Besborough-street—Improvements in the manufacture of bricks and tiles.
2725. James Dundas, Dundas Castle, Linlithgow—Improvements in the manufacture of cannon and ordnance of every description.
2749. Henry Widnell, Lasswade, Midlothian—Improvements in the manufacture of carpets and other textile fabrics.
18. John Henry Johnson, 47, Lincoln's-inn-fields—Improved system or mode of coating iron with copper.
206. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in the construction of kites, and in the application thereof to the purposes of carrying lines and of signalling. (A communication.)

215. William Polkinhorn, Gwennap, near Redruth—Improvements in apparatus for cleansing wheat.
222. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in looms for weaving. (A communication.)
302. Frederick Ransome, Ipswich—Improvements in drying articles made of plastic materials.
362. John Robb and Laurence Hill, Greenock—Improvements in the masts and spars of ships and vessels.
430. William Campion, Nottingham—Improvements in knitting machinery.
534. Samuel Cunliffe Lister, Manningham, near Bradford—Improvements in treating and preparing the fibres of flax and hemp, and other fibrous substances for spinning.
538. Samuel Cunliffe Lister, Manningham, near Bradford—Improvements in machinery for combing wool and other fibres.
548. David Hunter Brandon, 11, Beaufort-buildings, Strand—Improvements in machinery or apparatus for cutting fustians and other piled fabrics. (A communication.)
548. Robert More Butt, Fairfield Works, Bow—Improvements in the manufacture of night lights.
616. Richard Edward Hodges, Southampton-row, and Charles Murray, Manor-place, Walworth—Improvements in door springs.
632. John Morrison, Birmingham—Improvements in the manufacture of metallic pens.
638. Charles Carnell, Philadelphia—Improvements in the manufacture of bricks.
640. George Whyatt, Openshaw—Improvements in machinery or apparatus for cutting piled goods or fabrics.
644. Charles Frederick Behn, Commercial Sale Rooms, City—Improvements in machinery for making moulds for casting metal. (A communication.)
662. George Allam Barrett, William Exall, and Charles James Andrewes, Reading—Improvements in portable and fixed combined threshing machines.
668. Francis Crossley, M.P., Halifax—Improvements in the manufacture of mosaic rugs.
680. George Leonard Turney, Wood-street, Cheapside—Improved mode of arranging or packing pins and needles for sale.
690. Thomas M'Low, Middle-row, Holborn—Improvements in screw propellers.
712. Joseph Morgan, Manchester—Improvement in the manufacture of candles in which tallow is used.
714. Edward Vansittart Neale, Russell-place, and Thomas Dawson, King's arm's yard—Improvements in handles and parts of handles for umbrellas, walking sticks, knives, and for other like articles; and for articles of furniture, in stoppers, finger-plates, medallions, jewellery, furniture, and other decorative articles.
724. George Fergusson Wilson, and George Payne, Belmont, Vauxhall—Improvement in treating oils to obtain an elastic product.
734. Richard Peyton, Bordesley Works, Birmingham—Improvements in the manufacture of iron gates and fences.
746. Jacob Maas and James Adams, White Hart-yard, Southwark—Improvements in mills for splitting or grinding beans, peas, corn, and all kinds of grain.
752. Christopher Nickells, Albany-road, Surrey, and James Hobson, Leicester—Improvements in weaving pile fabrics when wires are used.
762. Denny Lane, Sunday's Well, Cork—Improvements in obtaining power by water.
790. Louisa Monzani, St. James's-terrace, Blue Anchor-road—Bermondsey—Improvements in folding stools and folding chairs. (A communication.)

Sealed June 1st, 1855.

2579. George Aubury, Queen street, Edgeware-road, and William Richard Bridges, Gravel-lane—A portable apparatus for the manufacture and supply of gas.
2601. Charles Thomas Guthrie, New Bond-street—Improvements in angles, T squares, straight edges, parallel rules, and other similar instruments employed in drawing.
2696. Gustave Irenée Sculfort, Maubeuge—Improvements in manufacturing screw plates.
2697. Jabez Smith, Bedford—Improved buckle or fastening.
99. John Charles Pearce, Bowling Iron Works—Improvements in machinery or apparatus for the manufacture and working of iron and other metals.
145. Samuel Isaacs, 22, Newman-street, Oxford-street—Improvements in the manufacture of artificial coral.
468. John Coney, Newhall-hill, Birmingham—Improved construction of gun lock.
620. Jonathan Musgrave, Bolton-le-Moors—Improvements in steam engines.
722. William Edward Newton, 66, Chancery-lane—Improved mode of constructing centre-bits.

Sealed June 5th, 1855.

2588. James Higgins and Thomas Schofield Whitworth, Salford—Improvements in the manufacture of bayonets, and in machinery or apparatus connected therewith.
2597. William Davis, Old Kent-road—Improvements in furnaces.
2608. Francis Puls, Whitechapel-road—Improvements in electro-galvanic apparatus for medical purposes, part of which improvements are also applicable to other electro-galvanic apparatus.
2611. Richard Larkins, 2, St. John's-villas, Highbury—Improvements in the construction of locks and keys.
2616. Charles Frederick Stansbury, Cornhill—A machine for cutting keys.
2629. John Court, jun., Sheerness—Improvements in rockets.
2632. Llewellyn William Evans and James Mc Bryde, Saint Helens—Improvements in the burning of sulphuret ores for making sulphuric acid and for smelting.
2648. Peter Joel Livsey and William Weild, Manchester—Improvements in cartridges and projectiles, and in the construction, mounting, and working of ordnance.
2652. Lieut. Matthew Curling Friend, R.N., 44, Ashburnham-grove, Greenwich, and William Browning, 111, Minories—An apparatus for determining the magnetic aberrations occasioned by local attraction.
2667. James Cunningham, West Arthurlie—Improvements in starching textile fabrics.
2673. John Avery, 32, Essex-street, Strand—Improvements in machinery for cutting metallic bars. (A communication.)
2728. Thomas Boyle, 45, Skinner-street, Snow-hill—Improvements in reflectors for artificial light.
3. Joseph Seguin, Paris—Improvements in obtaining motive power by the expansion of air, steam, and other fluids.
10. Claude Jules Fincken, 36, Rue de l'Echiquier, Paris—Preserving without loss of heat all windows, glass roofs, false roofs, &c., from the effects of condensation and damp, and also from the effects of external smoke, soot, and dust.
51. Edward Hayes, Stony Stratford—Improvements in apparatus for feeding thrashing machines.
114. James Lee Norton, Holland-street, Blackfriars—Improvements in recovering the wool from fabrics composed of wool or wool in connection with cotton or other vegetable substance.
246. Isaac Jecks, Trowse Newton-lodge, near Norwich—A machine for sweeping grass or weeds from lawns or fields and depositing the same into a box or other receptacle.
382. George Heppel, Preston—An improved rotary pump and engine. (A communication.)
396. Walter Neilson, Glasgow—Improvements in locomotive engines.
408. Victor Joseph Lebel, Jean Fourniol, and Jean Baptiste Remyon, Paris—Improvements in typographic presses.
570. William Galloway and John Galloway, Manchester—Improvements in balancing or regulating the pressure on the slide valves of steam engines.
590. Joseph Mitchell, Lansdown-road, Sheffield—Supplying grease, tallow, or oil, either with or without the addition of black lead, to locomotive engines, horizontal and beam engines, marine engines, and Nasmyth's patent steam hammer.
677. Charles Goodyear, 42, Avenue Gabriel, Champs Elysées, Paris—A new method of moulding india rubber and gutta percha.
678. John Getty, Liverpool—Improvement in the construction of steam and other vessels.
696. Marie Jeanne Thérèse Gillot, and Cécile Celestine Beauvais, 30, Upper Charlotte-street, Fitzroy-square—Improvements in purifying grain, vegetable, or botanical matter, and cochineal.
760. Joseph Brazier, Wolverhampton—Improvements in revolving or repeating fire-arms.
802. George Fergusson Wilson, Conrad Abben Hanson, and James John Walli-, Belmont, Vauxhall—Improvements in the manufacture of lamp candles, and in candle lamps for holding the same.
804. George Fergusson Wilson and George Payne, Belmont, Vauxhall—Improvement in ornamenting glass.
822. Thomas Hill, Walsall—Improvements in the manufacture of horse-shoe and other nails.

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietors' Name.	Address.
3722	May 25.	A Tap Protector	John Wright	Chipping Ongar, Essex.
3723	May 29.	Heater and part of a Kettle or other Vessel	Smith, Sissons, and Co.	8, Duke-street, Adelphi, and Eyre-street, Sheffield.
3724	May 31.	Improved Capstan for turning down Screw Cylinders or Piles	Rowland Brotherhood	Railway Works, Chippenham, Wiltshire.
3725	June 1.	Parallel Compasses	Charles Tilston Bright	Exchange Buildings, Liverpool.
3726	June 6.	Family Fire Escape	John Cuxon and Charles Frederick Lucas	Shiffnal, Shropshire. 8, Duke-street, St. James's.